ATR
Atlantic Test Ranges

Battlefield Communications Simulation System (BCSS)

BCSS is an exploitable and attackable opposing force command and control simulation system.

The Battlefield Communications Simulation System (BCSS) provides automated communications simulations to support DoD training exercises. This system supports real world events and the DoD transformation process, which satisfies the increasing need for joint force operations training in network warfare.

This system uses the Celerity CS6524RT-F Broadband Signal Recorder and Generator to provide a wide variety of base band analog and complex digital communications signals.

The opposition forces (OPFOR) requirements on communications simulations are met by the multiple local and remote-controlled communications simulator systems provided by the BCSS. To achieve this, BCSS provides software organized audio streams through the Communications Simulator (ComSim) Software developed by Cormac Technologies.

The system can be field deployable, configured for mobile operations or installed at a fixed-site facility. For field deployment, the mission equipment is housed in transit case containers for both transportation and operations, and is accompanied with field-deployable antennas. For mobile operations, the mission equipment is installed in full-size GMC Yukon SUVs with roof-mounted antennas. The systems can also be installed in mobile command center vehicles or configured for shipboard operations.

Potential applications include the following:

- Training
- Simulation
- Testing
- Signal disruption & jamming
- Foreign language transmission

The Battlefield Communications Simulation System (BCSS) vehicle

The BCSS tow vehicle and 20-foot equipment trailer

for more information

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NAVAIR RANGES
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January 2009

NAVAIR Public Release #09-153
Approved for public release; distribution unlimited

Battlefield Communications Simulation System (BCSS)

basic system capabilities

- Fixed, mobile, transportable, shipboard operations
- 19-inch rack mount for multiple system configurations
- Simple and complex modulations
- Pre-programmed scenarios or real-time emissions
- User-controlled or scenario-driven RF generator
- Data collection and signal analysis
- Operates on 120 VAC, 60 Hz
- Frequency range 2 MHz to 2.4 GHz

The Battlefield Communications Simulation System in transit case containers, front (left) and back (right).

subsystem capabilities

Signal Generator Subsystem

- Signal generator subsystem generates low-level simple or complex modulated radio signals within a selected bandwidth
- Provides simple CW, AM, FM, USB and LSB modulations
- Provides complex CDMA 2000, EDGE, FSK, GSM, IS 136, IS 95, PM Tone Comb, PSK, Square QAM, Tone Comb and WCDMA modulations

Scenario Development

- ComSim software designed to develop battlefield scenarios
- Text-to-speech engine allows scenario developers to type in voice content, select the voice gender, and control voice pitch and speed
- Real-live human voice can be input via computer microphone
- Waveform audio format (WAV) files can be imported for transmission
- Text messages with real intelligence can be transmitted via Morse Code, DTMF and a variety of FSK and PSK modulation types
- The other complex modulation types use either pseudo-random or pre-defined bit stream patterns

The BCSS field-deployable transmit antennas

Power Amplifier Subsystem

- Four-band linear power amplifier
- CH1: 2 - 30 MHz, 250 W nom.
- CH2: 30 - 500 MHz, 75 W nom.
- CH3: 500 - 1000 MHz, 75 W nom.
- CH4: 1000 - 2400 MHz, 40 W nom.
- Variable output (up to 15dB attenuation) to simulate lower-power threats

Antenna Subsystems

- **Field-deployable subsystem**
  - 120-60 HF antenna system (2 - 30 MHz)
  - HP-3512/VRC VHF/UHF whip antenna (30 - 500 MHz)
  - DMA-324 discone antenna (500 MHz - 2.4 GHz)
  - SAS-230 receive-only antenna
- **Mobile System**
  - 120-49 HF vehicular antenna (2 - 30 MHz)
  - GD1813HP vehicular VHF/UHF antenna (30 - 500 MHz)
  - HP5250S/VRC vehicular antenna (500 MHz - 2.4 GHz)
  - 20-032 mobile receive-only scanner antenna

Vehicle System

- 2008 GMC Yukon XL, four-wheel drive, four-door, 2500 SLT equipped with 5 KW generator and 2 KW invertor
- Equipment mounted in two 20U racks
- Roof-mounted antennas